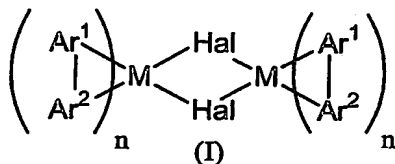


## Claims

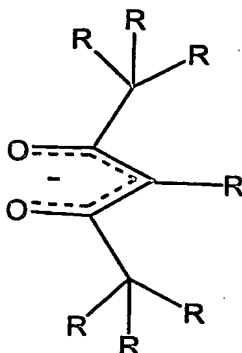
- 1) A method of forming a metal complex of formula  $M(Ar^1Ar^2)_nL$  comprising the step of reacting a compound of formula (I) with a bidentate ligand L:



wherein  $Ar^1$  and  $Ar^2$  are each independently an optionally substituted aryl or heteroaryl;  $Ar^1-Ar^2$  forms at least one carbon-M bond by reaction of M with a carbanion of  $Ar^1-Ar^2$ ; L is a compound of formula  $Ar^1-Ar^2$ ; M is iridium, rhodium, platinum or palladium; Hal is a halogen; and n is a number from 1-3 having a value necessary to satisfy the valency of metal M,

characterised in that the reaction is performed in the presence of an enabling ligand that is capable of breaking the halogen bridge of the compound of formula (I).

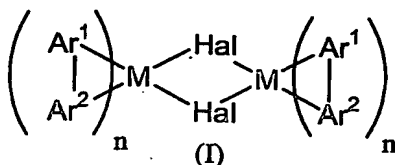
- 2) A method according to claim 1 wherein Hal is bromine, chlorine or iodine, preferably chlorine.
- 3) A method according to any preceding claim wherein  $Ar^1-Ar^2$  is phenylpyridine.
- 4) A method according to any preceding claim wherein  $Ar^1-Ar^2$  and L are the same.
- 5) A method according to any preceding claim wherein  $Ar^1-Ar^2$  and L are different.
- 6) A method according to any preceding claim wherein the enabling ligand is a monodentate ligand.
- 7) A method according to claim 6 wherein the monodentate ligand is selected from optionally substituted pyridine and triarylphosphine.
- 8) A method according to any one of claims 1-5 wherein the enabling ligand is a bidentate ligand of formula (IIb):



(Iib)

wherein each R is independently selected from H or a substituent.

- 9) A method according to claim 8 wherein the ligand of formula (Iib) is formed by treatment of a corresponding protonated compound with a metal-free base.
- 10) A method according to claim 8 or 9 wherein each R is hydrogen.
- 11) A method of forming a metal complex of formula  $M(\text{Ar}^1\text{Ar}^2)_n\text{L}$  comprising a first step of preparing a compound of formula (I) by reacting a compound of formula  $M(\text{Hal})_m$  with a compound of  $\text{Ar}^1\text{-Ar}^2$  and a second step according to any preceding claim, wherein m is a number necessary to satisfy the valency of M, characterised in that the first and second steps are performed in a one-pot process.
- 12) A method according to any preceding claim wherein the reaction is performed in a protic solvent, preferably ethylene glycol.
- 13) A method of forming a metal complex comprising:
  - a) a first step of reacting a compound of formula  $M(\text{Hal})_m$  with a compound of formula  $\text{Ar}^1\text{-Ar}^2$  to form a compound of formula (I):



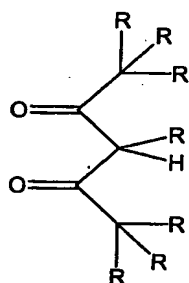
and

b) a second step of reacting the compound of formula (I) with a reactive ligand that is capable of breaking the halogen bridge of the compound of formula (I)

wherein  $\text{Ar}^1$  and  $\text{Ar}^2$  are each independently an optionally substituted aryl or heteroaryl;  $\text{Ar}^1\text{-Ar}^2$  forms at least one carbon-M bond by reaction of M with a carbanion of  $\text{Ar}^1\text{-Ar}^2$ ; L is a compound of formula  $\text{Ar}^1\text{-Ar}^2$ ; M is iridium, rhodium, platinum or palladium; Hal is a halogen; m is a number from 2-8 and n is a number from 1-3, m and n each having a value necessary to satisfy the valency of metal M,

characterised in that the first and second steps are performed in a one-pot process.

- 14) A method of forming a metal complex comprising the step of reacting a metal halide with a ligand of formula (II):



(II)

wherein each R is H or a substituent,

characterised in that the reaction is performed in the presence of a metal-free base of sufficient strength to deprotonate the compound of formula (II).